EXHIBIT 1

SUN CHEMICAL v. FIKE CORPORATION
Human Factors Analysis

Prepared by:	***Steve Arndt, PhD, CHFP***
Prepared for:	***Reilly, Janiczek, McDevitt, Henrich & Cholden, P.C.***
Project Number:	***32-5099***
Project Name:	***SUN CHEMICAL v. FIKE CORPORATION***
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ENGINEERING

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List of Opinions

I, Steven R. Arndt, hold the following opinions to a reasonable degree of scientific certainty at the time of the issuance of this report. These opinions are based on my review of the supplied materials, my review of relevant standards and literature my education, training, and experience. The basis for each opinion is described in detail in the body of the report. Where direct citations are provided in footnotes, they are not necessarily my sole basis for the associated statements and in many cases there is additional supporting testimony that is not included in the footnotes.

1. The Fike suppression and isolation equipment had an FM compliant and functioning audible alarm at the time it was installed and at the time of the incident.
2. The descriptions of the expected performance of the Fike isolation and suppression equipment in the promotional information including, "Explosion Protection Application Profile – Dust Collection Systems" and the "Explosion Protection Application Bulletin – Protecting Dust Collectors with Explosion Suppression", were factually accurate.
3. The communications process involved between Sun Corporation, Faber, UAS, Suppression Systems Incorporated and Fike Corporation in the bidding, selection, negotiation, design, construction and implementation of the complex dust collection system, provided repeated and direct communication along accessible channels between all parties, thus rendering any alleged misrepresenting information contained within marketing brochures irrelevant in Sun Chemicals decision making process to ultimately purchase the Fike protection equipment.
4. Additional or alternative warnings and/or instructions from Fike/SSI would not have altered the behaviors of US Ink employees, nor should instructions associated with response to a fire or explosion outside of the dust collector have come from Fike or SSI.

The analysis and opinions are based on the materials reviewed to date produced in discovery in the federal litigation (docket No.: 2:13-ev-04069-FSH-JBC). I reserve the right to update and supplement my analysis and opinions should new or additional facts become available.

Sincerely,

Steven R. Arndt, Ph.D., CHFP
Principal

Background

On October 9, 2012, at approximately 1:15 pm Eastern Standard Time (EST), fire caused burn injuries to seven workers, including three who sustained third-degree burns, at the US Ink/Sun Chemical Corporation ink manufacturing facility in East Rutherford, New Jersey. Workers were drawn to a black ink mixing room (commonly called the pre-mix room at US Ink) by the initial flash of the fire from a bag dumping station and by a loud thumping noise from the rooftop. As the workers congregated at the doorway, they observed a small fire in the ductwork of a newly installed dust collection system above a process mixing tank. Suddenly, a fire emerged from the pre-mix room and engulfed the seven employees in flames. Coworkers responded to the seven injured employees and took them out of the building. Emergency responding units from the East Rutherford Volunteer Fire Department arrived on scene at 1:20 pm EST. Emergency responders transported the victims to the local hospital while firefighters began combating the fire. After the incident, production was suspended pending internal and external investigation by the company, U.S. Occupational Safety and Health Administration (OSHA), and U.S. Chemical Safety and Hazard Investigation Board (CSB). Some production of colored inks resumed about a week later, but black ink production was halted until the end of December.[1]

Before October 2012, the facility used a wet scrubber system to collect particulate materials during the dry material charging stages of the ink mixing process. This system was replaced by a new dust collection system, shown in Figure 1, a simplified graphic created by the CSB. The dust collection system consisted of a branching system of various sizes of ducts, including flexible connectors attached to the top of each mixing tank and to the bag dump station. The flexible ducts joined an 8-inch duct, which transitioned to a 9-inch duct and ultimately a vertical 12-inch duct (riser) going up through the pre-mix room ceiling. Dust particles were suctioned though the ducts and riser into the exhaust fan–driven dust collector, located on the roof of the facility. Positioned outside of the building and upstream of the UAS dust collection unit was the Fike/SSI explosion

[1] Chemical Safety Board Case Study Report, 2013-01-I-NJ.

isolation unit, attached to the dust collection unit hopper was the Fike/SSI explosion suppression unit.

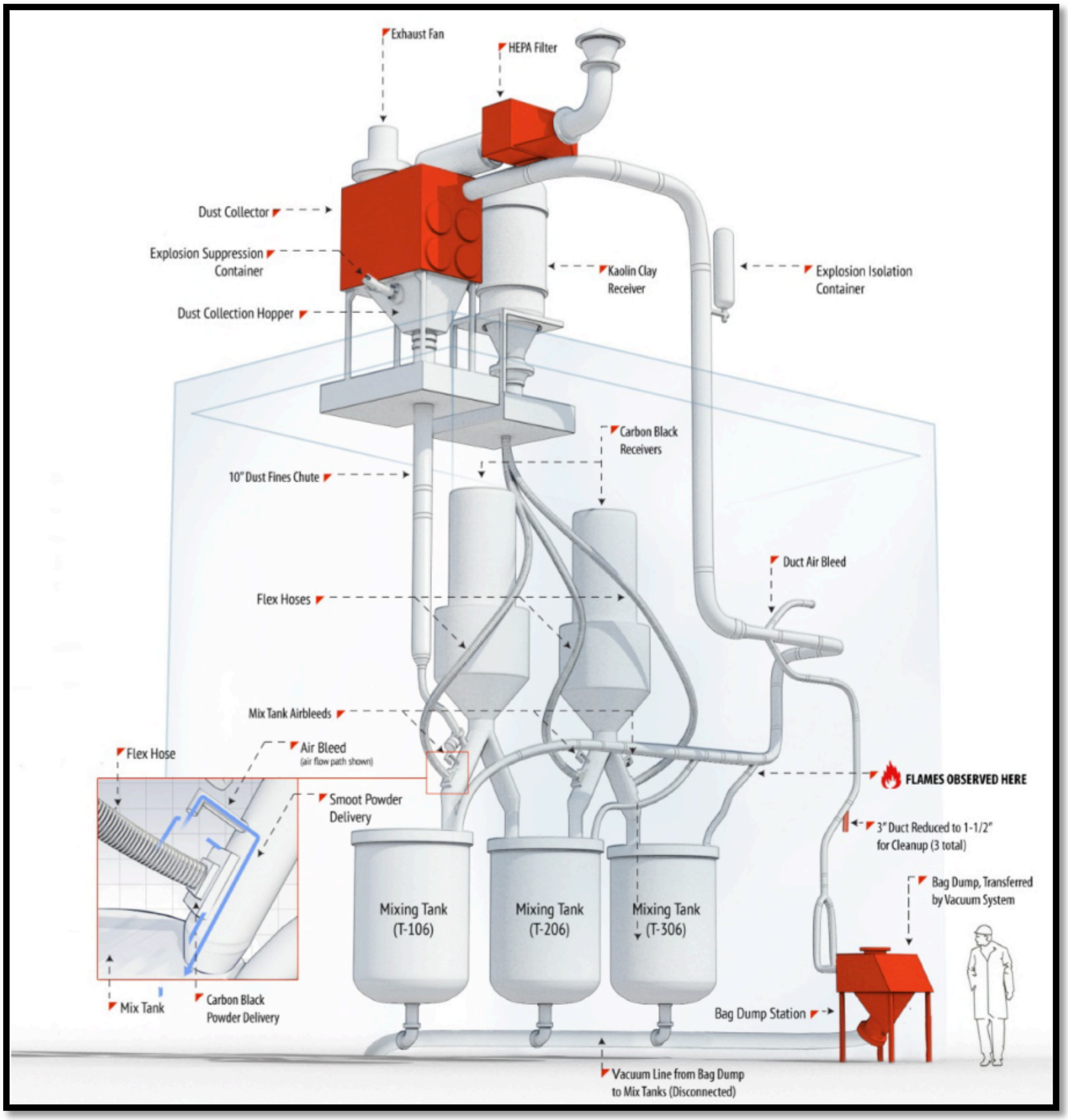

Figure 1 Overview of US Ink dust collection system. (from CSB report)

The dust collection system was designed to automatically start when any of the mixing tank motors was energized and to shut off automatically when all the mixers were inactive. On the evening prior to the incident the dust collection system failed to shut off properly. A US Ink employee manually shut down the system and reported the malfunction to his superiors. US Ink did not address this

malfunction prior to the beginning of production on the day of the incident. Employees restarted the mixing tanks and dust collection system on the Monday night shift, October 8, 2012, for production scheduled for the next day.

On Tuesday morning October 9, 2012, black ink production began. One batch of ink was completed in tank T-306 before lunch. Following lunch a new batch was started in T-306. Around 1:00 pm a worker was loading materials into the bag dump station when he heard a noise from T-206. After checking operational conditions in the control room the operator saw a flash fire originating from the bag dump station that he had just left. The worker took no action to shut down the process equipment; he proceeded to his supervisor's office to alert him of the fire.

Workers elsewhere in the plant heard a loud thump from the roof area of the processing area and began to congregate at the entrance to the pre-mix room. Workers reported that they could see rubberized spiral-wound duct hose material that connected T-306 to the dust collection riser appeared to be melting and dripping onto the tank. At this point there still had not been any emergency response to the fire from US Ink workers. One employee alerted the others that the explosion suppression equipment had activated and there was a fire. The employee left the pre-mix room to call 911 just prior to the occurrence of the fire.

None of the employees were wearing flame-resistant clothing (FRC).

When firefighters arrived they went to the dust collection unit on the roof and found there was nothing to extinguish because the explosion suppression and isolation equipment, had prevented the fire from entering the dust collection unit.

Introduction

The plaintiff's claim under the New Jersey Consumer Fraud Protection Act is that that Fike/SSI utilized an unconscionable commercial practice, deception, fraud, false pretense, false promise, misrepresentation, or the knowing, concealment, suppression, or omission of material facts with intent that Sun Chemical Corporation would rely upon such concealment, suppression or omission, in connection with their decision to purchase the Fike explosion suppression and

isolation devices to protect the dust collector within their larger dust collection system.

The CFA is a performance base communication regulation, that is to say it can never provide sufficient detail for all applications to define specific language that must be present or that is not allowed to be present. This process specifically deals with commercial information collection, and presentation. The regulation deals with the process and the output of information transmission. A company collects and compiles information about their products and then they present that information to the potential purchasers of the product. Because the regulation is dealing with the process and not simply the output, the way in which the information is collected, organized, and presented as a system, must be a part of the examination in a scientific evaluation. It is necessary to examine the entirety of each message presented, (the content), within the context of how it is presented, (the channel), while accounting for the characteristics of the product producer (sender) and the potential consumer (receiver)[2]. Additionally, when the communication is not a single one-time, one-way event there are opportunities for the communication to feedback and update when parties seek clarifications or request additional information. Only when this total evaluation is conducted can the performance-based evaluation required by the regulation be assessed on a pass/fail basis. Analyses of this type are within the realm of individuals with human factors training.

Words can have multiple meanings, and the context of their application must be considered when attempting to select a specific definition. This is especially important if an analysis is being performed in hindsight to determine accuracy of the greater message content. For example when examining language within the context of a claim, under the CFA. Context of the language and intent of the sender are of critical importance.

One example of this would be the frequent use of the word “system” in this matter. If one were to rely on dictionary definition of the term you would find the following:

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[2] (Laughery & Wogalter, 1997)

Merriam Webster

1 : *a regularly interacting or interdependent group of items forming a unified whole <a number system>: as* ***a*** *(1)* ***:*** *a group of interacting bodies under the influence of related forces <a gravitational system> (2)* ***:*** *an assemblage of substances that is in or tends to equilibrium <a thermodynamic system>* ***b*** *(1)* ***:*** *a group of body organs that together perform one or more vital functions <the digestive system> (2)* ***:*** *the body considered as a functional unit* ***c :*** *a group of related natural objects or forces <a river system>* ***d :*** *a group of devices or artificial objects or an organization forming a network especially for distributing something or serving a common purpose <a telephone system> <a heating system> <a highway system> <a computer system>* ***e :*** *a major division of rocks usually larger than a series and including all formed during a period or era* ***f :*** *a form of social, economic, or political organization or practice <the capitalist system>*

2 : *an organized set of doctrines, ideas, or principles usually intended to explain the arrangement or working of a systematic whole <the Newtonian system of mechanics>*

3 a : *an organized or established procedure <the touch system of typing>* ***b :*** *a manner of classifying, symbolizing, or schematizing <a taxonomic system> <the decimal system>*

4 : *harmonious arrangement or pattern* ***:*** *order <bring system out of confusion — Ellen Glasgow>*

5 : an organized society or social situation regarded as stultifying or oppressive
6**:** establishment 2 —usually used with the

Because a dictionary is not typically the best source for technical definitions it would be more accurate to seek a definition within scientific or technical references. For example:

Human Factors in Systems Engineering (Chapanis, 1996)

System - interacting combination, at any level of complexity, of people, materials, tools, machines, software, facilities, and procedures designed to work together for some common purpose.

NFPA Glossary of Terms (NFPA, 2016)

System - Several items of equipment assembled, grouped, or otherwise interconnected for the accomplishment of a purpose or function.

When engineers and scientists discuss complex manufacturing process equipment that includes hundreds or thousands of interconnected parts, components, controls, sensors, actuators, monitors, mechanical and electrical linkages which work together, it is natural to refer to them as a system for the sake of efficiency in communication. However, it must be clear between the sender and the receiver what the boundaries of the system are as they are being referred to by the sender. In this case the overall process of US Ink, related to this event, was the production of black ink. One definition of system could include everything associated with the production of the ink, from the time materials are ordered to be delivered to the factory until the time when the end user takes delivery of the completed product. That system can then be split and narrowed many times into smaller and smaller sub-systems. Just examining the manufacturing system that was present in the pre-mix room has numerous sub-systems. In fact, each component element can be referred to as a system if it is defined that way. If the sender and receiver have the same contextual understanding, then they may refer to any defined boundary as a system. Further “zooming in” on smaller groupings of related equipment designed to accomplish a goal would be defining the dust collection system. This would include everything from the point where dust is pulled from the air, or surfaces by hoses, or from the bag dump station, or the tops of the processing tanks, through the point where dust is removed from the hopper and the filters of the dust collection unit on the roof. Within every system there are sub-systems, and sub-systems within that. Process designers, engineers and scientists must define the scope or boundaries of the system they are referring to in order to make the message clear to the receiver.

In this document when I refer to the dust collection system, I mean all equipment from the initial collection point through the point where dust is removed from the hopper and filters of the dust collector. If I am discussing a sub-system I will define it at the time or specify the name of the unit (e.g., explosion isolation unit, explosion suppression unit, dust collection unit).

Finally, when evaluating communications it is necessary to examine the receiver of the message, because only then can you determine what meaning that individual would get from any specific message. There is no communication without the receiver and the receiver is the final filter on the meaning of the message.

This evaluation of message content, context, sender and receiver is applicable to all situations. When the sender and the receiver have elevated levels of technical knowledge it is the same process and there is an expectation of shared knowledge, increased feedback and expectations of technical proficiency. Additionally, within a complex communication process between two parties with elevated technical knowledge, there are many types of messages utilized, from simplistic introductory or marketing materials through very technically detailed specifications, performance documents and the back and forth communications that occurs during the interactions.

Opinions and Bases

Opinion 1

The Fike suppression and isolation equipment had an FM compliant and functioning audible alarm at the time it was installed and at the time of the incident.

The FM Approval Standard for Explosion Suppression Systems, Class Number 5700 (1999), states:

4.4 Operational, Physical, and Structural Features
4.4.1 Control Units (Panels)

...
b. They shall be equipped with audible and visual alarms and a means for automatic shutdown of a process, blower, conveyor, etc.
...
d. Fault detection or discharge of the suppression system shall result in the activation of audible and visual alarms and activation of the shutdown circuit.

Every FM testing report and certification that I have reviewed in this case that has evaluated the Fike Control Panel has used the same language.

They [the control panels] are equipped with audible and visual alarms, and means for automatic shutdown of customers' process equipment. Fault detection on actuation and detection circuits is performed for opens, shorts, or ground faults as applicable. Fault detection or activation of the control system results in activation of both audible and visual alarms and shutdown circuits.

There is no dispute in this case that the visual and audible alarms were functioning following the event.

Plaintiff's experts, Dr. Myers and Dr. Murphy have posited that the Fike suppression and isolation equipment is in violation of CFA because some of Fike's materials report FM compliance, and it is Dr. Myers and Dr. Murphy's opinion, that part of the reason the equipment is not compliant is that it did not come with an audible alarm.

Dr. Murphy's logic to support this opinion is the following:

Although FM tests and certifies the components themselves, they do not provide a definition of audible alarm, such that a third party can test if a signal meets the FM passing criterion. Since no criterion or measurement technique is provided in the materials he has reviewed, Dr. Murphy has selected the Merriam-Webster's definition for audible, then based on references to NFPA 69 and NFPA 72, as well as ISO 7731, he has developed his own method for quantitatively testing if the alarm on the Fike system is audible at his criterion which by extension he opines, must be what FM was using for certification. The problem with using this sequence of links and associations is, he is not evaluating the primary question of, did Fike incorrectly state the control panels were FM complaint, as it relates to the auditory alarm. It does not matter from the CFA standpoint if the system with which FM evaluates the audible alarm is specified, or if it meets Dr. Murphy's developed criterion. The control panels were tested by FM, they all specifically

satisfied the auditory alarm requirement as stated in the FM test reports, therefore there is no misrepresentation by Fike on this topic.

It is FM who wrote the performance specification for compliance, it is FM who conducted the testing on the control panels, it is FM that produced reports stating that the panels met FM requirements for audible alarms, and it is FM that determines what the definition of audible alarm is in the context of their certification.

Additionally, Dr. Murphy has combined multiple sections of standards that should not be considered as applicable to the Fike control panels. It is clear from the design specifications, the descriptions of the device and the supply of a method to link Fike equipment to external alarms that the piezo alarm on the control panel was not intended to perform the function of an audible notification appliance, fire alarm signal as they are defined by NFPA 72, or an auditory danger signal as defined by ISO 7731. Fike materials make no reference to either of these standards and Dr. Murphy has applied the criterion in these standards too broadly by including the Fike control panel piezo alarm.

Opinion 2

The descriptions of the expected performance of the Fike isolation and suppression equipment in the promotional information including, "Explosion Protection Application Profile – Dust Collection Systems" and the "Explosion Protection Application Bulletin – Protecting Dust Collectors with Explosion Suppression", were factually accurate.

All of the Fike data sheets, the profiles, design submissions, proposals and email communication that I have reviewed have been clear in the scope of their representations of performance. Dr. Myers has opined that the documents were inaccurate when compared to the final outcomes of the incident at Sun Chemical. Dr. Myers points to a Fike document titled "Explosion Protection Application Bulletin – Protecting Dust Collectors with Explosion Suppression", and states that dust collector explosion suppression and isolation system designed and implemented to protect the dust collector failed because workers were injured and the plant was shut down. This event was not caused by a fire or deflagration that started within the dust collection unit. The injuries that occurred were a

result of the incorrect, unsafe response of Sun Chemical employees, a failure by US Ink to properly evaluate the hazards and risks of the entire dust collection system and a failure of workers to either have been trained properly to respond to fires or a failure to follow their training.

When the context of the documents being identified is evaluated, the "Benefits" section of this document is referring not only to Fike suppression and isolation equipment but also to the general protection of dust collection equipment from explosions.

All of the Fike materials describing the capabilities of the Fike suppression/isolation equipment clearly indicate the context of their performance. The systems are designed and implemented to prevent spread of fire or explosion from the dust collector or into the dust collector. They do not represent that they can protect an entire dust collection system and manufacturing process from fires and explosions that occur at remote locations within other equipment. The documents also do not represent that they can protect workers who either have not been trained properly by their employer, or who are not following their employer's training while responding to a fire event.

Dr. Myers goes on to state that the same document is inaccurate because it discusses the effects that human error, equipment failure and lack of maintenance can have on preventive techniques for explosion protection and that he interprets the document to state that the Fike suppression system will work despite human error, equipment failure and lack of maintenance practices. Nowhere is this stated in the document and Dr. Myers has not provided any support for his interpretation of how the language would be read or understood by someone considering the benefits of this equipment or the design of an entire dust collection system.

The language in this section of the document is not stating that a user should not implement preventive protection, but can be read as if those systems fail, explosion suppression can be responsive to the failure.

It is my understanding that if the explosion is suppressed by extinguishing the combustion before the fire is produced then this would reduce deflagration pressure and prevent release of pressure, fire and toxic materials, just as that document states.

In Dr. Myers report section 2.3, he states that Fike materials were inaccurate because they indicated the equipment was in compliance with NFPA 654 *Standard for Prevention of Fire and Dust Explosions from Manufacturing, Processing and Handling of Combustible Particulate Solids*. Specifically that the Fike equipment did not prevent deflagration propagation between pieces of equipment connected by ductwork or from a dust collector upstream into the work areas where employees were present. He states that NFPA 654 contains multiple requirements for isolation of equipment connected by ductwork, including dust collection systems.

It is my understanding that the initiation of the event did not occur in the UAS dust collector, rather, that in response to detecting elevated pressure, the Fike equipment triggered the suppression and isolation equipment to protect the dust collection unit. These devices did prevent the propagation of the deflagration into the dust collector thereby satisfying the requirements of NFPA 654 as it relates to the Fike equipment and dust collection unit.

From the documents I have reviewed the indication is that the Fike suppression/isolation equipment would protect the dust collection unit from a fire or explosion moving towards the unit and they would protect the remainder of the dust collection's system upstream of the equipment from a fire or explosion starting within the UAS dust collector.

Another example of understanding scope and context can be found in the discussion of what constitutes a system failure. Dr. Myers opines that the Fike document stating, "Fike systems have never experienced a system failure in the field." is a violation of CFA because Fike documentation has described equipment failures previously. The context of the message and the meaning of system failure must be understood before such a determination can be made.

Detection and decision-making operations can be evaluated within the realm of Signal Detection Theory (SDT). With this tool the performance of any system, in this case the "system" is defined as the set of sensors, processing equipment and decision making rules necessary to accomplish the task of detection, identification and decision making, can be evaluated.

Signal Detection Theory (SDT) is applicable in situations where there are two discrete states (signal and no signal) that cannot easily be discriminated[3]. SDT is a well-established, scientific foundation that can be used to describe how people or equipment will respond to signals within background noise. An introduction to the terminology in SDT is provided below. More detailed descriptions are available in most human factors textbooks.[4]

Signal – deflagration or explosion within the monitored system

Noise – anything in the background that interferes with the detection of the signal (e.g., process noise, dirty power supply, process inputs resulting in pressure spikes)

Possible Outcomes

Hit – correctly detecting an explosion when one is present, and activating suppression/isolation

False Alarm – incorrectly detecting an explosion when one is not present, and activating suppression/isolation

Miss – incorrectly not detecting an explosion when one is present or failing to activate suppression/isolation when an explosion is present

Correct Rejection – correctly not detecting an explosion and not activating suppression/isolation when there is no explosion present

Response or Decision Criterion – the concept that people or equipment set a criterion along the hypothetical continuum of sensory activity, and that this criterion is the basis upon which a person/equipment makes a decision about the presence or absence of a signal. The position of the decision criterion determines the probabilities of the four outcomes listed above. The decision criterion is adjustable by the person/designer (some cases the end user), depending on their evaluations of expected likelihoods of a signal, and the costs and benefits of each outcome. This criterion is not absolute and can change within an individual or set of equipment. An example would be if a manufacturing process causes spikes in pressure or if background noise to sensing equipment is high, either the decision

[3] (Wickens, 1984)
[4] (Sanders & McCormick, 1976)

criterion must be moved (causing shifts in probabilities) or there must be reductions in the noise or an increase in the sensitivity.

Sensitivity – the ability of the individual/equipment to detect the signal or the keenness or resolution of the sensory system, or how well can the system separate background noise from the signal.

Mr. Scott Rockwell provided the definition of system failure from the perspective of Fike during his deposition as “A failure to perform the protection for which it was such designed.[5]”, this would be classified as a miss under SDT. Mr. Rockwell went on to describe spurious activations as false alarms. Under these definitions and within the context of the message, the information provided by Fike would not be a violation of the CFA.

Opinion 3

The communications process involved between Sun Corporation, Faber, UAS, Suppression Systems Incorporated and Fike Corporation in the bidding, selection, negotiation, design, construction and implementation of the complex dust collection system, provided repeated and direct communication along accessible channels between all parties, thus rendering any alleged misrepresenting information contained within marketing brochures irrelevant in Sun Chemicals decision making process to ultimately purchase the Fike protection equipment.

Even if I accept the allegations of the single misrepresentative brochure that Dr. Myers identifies, which I do not, when the messages in dispute are evaluated within the context of the sender, the channel and the receiver, there is no scientific support for a conclusion that Fike would assume that potential buyers of their equipment could in any way rely on the materials in such a way that they would be mislead, deceived or damaged by the language used.

The language used in the referenced promotional materials is so basic when read in context that it would not be likely to mislead a reasonable average reader of the documents. This situation is even more remote, to the point of being inconceivable, when the materials are reviewed by a qualified and competent

[5] Rockwell deposition, p.29-30

system designer or engineer making complex decisions as to how to design, build and implement a complex safety system in a hazardous process environment.

Each quotation document sent by SSI to Faber, was then incorporated by Faber into their proposals and sent to Sun, identified the capabilities and limitations within the "System Recommendations" section, stating:

Per the requirements of NFPA 69 and 654, we are proposing to equip the above stated collector with (1) Active Fike EPACO explosion protection system to detect, and chemically isolate a deflagration originating in the Dust collector.

The Fike Operations Manuals state:

5.2.3 Alarm State

When the detection circuits have exceeded the alarm conditions required by the configuration, the EPC enters the Alarm State. In the Alarm State the red Alarm LED is 'ON', the local piezo 'ON', the P6 Alarm relay is de-energized, and the series firing output is activated.

All of the Fike Explosion Protection Application Bulletins either through the language presented and/or the diagrams provided indicate the limit of the protective capabilities of the equipment being the dust collection unit. They do not represent that they will protect an entire manufacturing process environment.

Additionally, emails between Sun employees demonstrate both their attitudes towards puffery presented in marketing materials[6] and their ability to actively evaluate system performance and seek to resolve questions with Fike prior to the completion of the system.[7]

Opinion 4

Additional or alternative warnings and/or instructions from Fike/SSI would not have altered the behaviors of US Ink employees, nor should instructions associated with response to a fire or explosion outside of the dust collector have come from Fike or SSI.

[6] Email from Richard Blake to Robert Scheer, 7/9/12, Sun000033119

[7] Email from Paul Dudley to Lon Scholl and Lou Toscano, 1/30/2013

The safety of the workers at the US Ink facility is the responsibility of the employer. OSHA has stated in letters of interpretation that employers cannot rely on equipment manufacturers for the safety of the employees. Certainly, a manufacturer of a component product cannot foresee the training requirements for an entire facility work force under all process upset or emergency conditions. Workers at the US Ink facility, even after having unambiguous visual signals that a fire and explosion had occurred, did not take appropriate measures to safeguard themselves. It is not reasonable to expect that Fike or SSI could have altered the behaviors of the workers or management at US Ink through their supplying additional warnings or instructions.

The scientific literature has shown that there is no evidence that within the real world warning labels are effective in changing safety critical behaviors.[8] The potential effectiveness of a warning for changing behavior depends on many factors[9]. The research on warnings about various hazards relating to a wide variety of products and equipment indicates that warnings are generally not effective in preventing accidents and injury[10]. The relevant factors to these observed results include the failure of people generally to comply with warnings and instructions, and their willingness to take risks by not complying with warning information. Research on the effectiveness of warnings has shown that certain criteria must be met before information presented can affect and change user behavior. The most basic premise of whether a warning will be effective necessitates that the user be seeing such information and, at a minimum, read it, then be willing to comply and have the ability to alter the events to prevent the adverse outcome.

In another study about user compliance with on-product warnings, it was shown that people greatly overestimate their own compliance. For example, when presented with a hammer that had a label instructing the user not to use that very hammer, subjects predicted they themselves would have a 50 % compliance rate, on average, and that other people would comply at an average rate of 42 %[11] . The actual compliance with that on-product hammer warning was zero.

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[8] (Mccarthy, Finnegan, Krumm-scott, & Mccarthy, 1984)
[9] (Ayres, T.J., Gross, M.M., Wood, C.T., Horst, D.P., Beyer, R.R., Robinson, 1994)
[10] (Arndt et al., 1998)
[11] (Ayres et al., 1990; Dorris & Purswell, 1977)

Human factors literature on warnings suggests that the source of information about dangers can be the situation or product itself. The appearance of an open and obvious situation has the tendency to communicate the hazards and consequences. Warning about hazards that are obvious or well known is not only unnecessary, but is also not likely to alter behavior in a manner that will prevent accidents or injuries.

There is no indication that US Ink was unaware of the potential hazards associated with fires or explosions within the pre-mix room. There is no information that would suggest that US Ink and its employees could not have responded by exiting the area or that they interpreted information from the Fike system that caused them to act in the way that they did, by moving into the pre-mix room, and attempting to extinguish a fire that they had correctly already identified. Especially, given the fact that US Ink's designated fire coordinator did not perform either of his duties which were to announce the fire and/or pulling the alarm box because he was one of the people injured while observing the situation.

There is no scientific basis provided by Plaintiff experts that supports an opinion that any additional warnings, signage training within the scope of responsibilities of a component part manufacturer would have altered the safety critical behaviors of the US Ink employees sufficiently to prevent the injuries.

Demonstrative Exhibits for Deposition and Trial

At this time, I have not completed preparation of final exhibits for deposition or trial. If needed, I expect that the exhibits may include, but not be limited to, my report and the materials listed in the body and/or provided in the attached appendices, excerpted sections from any relevant standards, photographs or blueprints of the product, available manuals, labels and/or instructions, and results from my analysis described above. Additional demonstrative exhibits may be prepared when necessary to adequately illustrate and explain the technical details of the analysis, findings, or opinions to the jury.

My bill rate at the time of issuance of this report is $350/hour for all work. A copy of my current curriculum vitae is attached.

Documents Reviewed

As part of my analysis, I have reviewed and relied upon materials produced in discovery in this case, listed in a following section, and on materials cited within this report and listed in the references section. Where depositions or reports were provided with attachments or exhibits, those documents were also reviewed, even if not individually listed.

The analysis and opinions are based on the materials reviewed to date produced in discovery in the federal litigation (docket No.: 2:13-ev-04069-FSH-JBC). I reserve the right to update and supplement my analysis and opinions should new or additional facts become available. If additional opinions or alterations to the opinions stated in this report are generated, those opinions will be communicated to Reilly, Janiczek, McDevitt, Henrich & Cholden, P.C..

References

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NFPA 69 (2008) Standard on Explosion Prevention Systems

NFPA 72 (2010) National Fire Alarm and Signaling Code

NFPA 654 (2006) Standard for the Prevention of Fire and Dust Explosions from the Manufacturing, Processing, and Handling of Combustible Particulate Solids

List of Reviewed Materials

- Complaint and Jury Demand
- Fike Joinder Complaint Exhibits
- OSHA Investigation Records
- US CSB Report, US13524RP
- SSI Diagrams
- US Ink Dust Collector Dust Removal Schematic
- Case Study- Ink Dust Explosion and Flash Fires in East Rutherford, New Jersey (2012-01-NJ)

Codes and Standards

- FM Approvals (1999) Approval Standard for Explosion Suppression Systems, Class Number 5700
- FM Approval Standards
- FM Approval Guide
- FM Approved Product News Volume 31, Number 2, 2015
- FM Approval Reports

Expert Reports

- Patrick Murphy, Exponent, dated June 29, 2016
- Timothy Myers, Exponent, dated June 29, 2016

Deposition Transcripts and Exhibits

- Robert Scheer, 10-20-14
- Bruce McLelland, 04-30-15
- Richard Blake, 10-28-14
- Scott DeMonte, 11-26-14
- Joseph Petrone, 05-05-15
- Lon Scholl, 11-06-14
- Richard Seidel, 09-22-14

- Luis Toscano, 04-23-15

Discovery Documents

- Email Attachments
    - Fike Joinder Complaint Exhibits
    - FM 5700 Explosion Suppression Systems
    - FM-Approval Standards for Explosion Suppression Systems
    - FM-Approval Standards
    - FM-Approval Guide Explosion Suppression Systems
    - FM-Approval Guide
    - FM-Approved Product News
    - Sun Chemical v. Fike & SSI Complaint 7-6-13
- Faber proposals
- Fike/SSI Brochures
- CSB photos (Bates Nos. SUN000029115-SUN000029249)
- Chronology of events prepared by Lou Toscano of Faber Inc. (Bates Nos. Faber 001014-001019)
- Exponent Slide Show dated March 21, 2013 (Bates Nos. SUN00031395-SUN00031457)
- Chronological list of emails, submissions, drawings and invoices which represent the negotiation process between the parties. All corresponding document are attached to the chronology
- NFPA 654, Standard for the Prevention of Fire and Dust Explosions from the Manufacturing, Processing, and Handling of Combustible Particulate Solids 2017
- NFPA 69 Standard of Explosion Prevention Systems 2008 Edition.
- NFPA 72, 2010 Edition, National Fire Alarm and Signaling Code
- FM.pdf
- FMA-SUN00001-FMA-SUN00240
- FMA-SUN00241-FMA-SUN02222
- FMA-SUN02223-FMA-SUN03244